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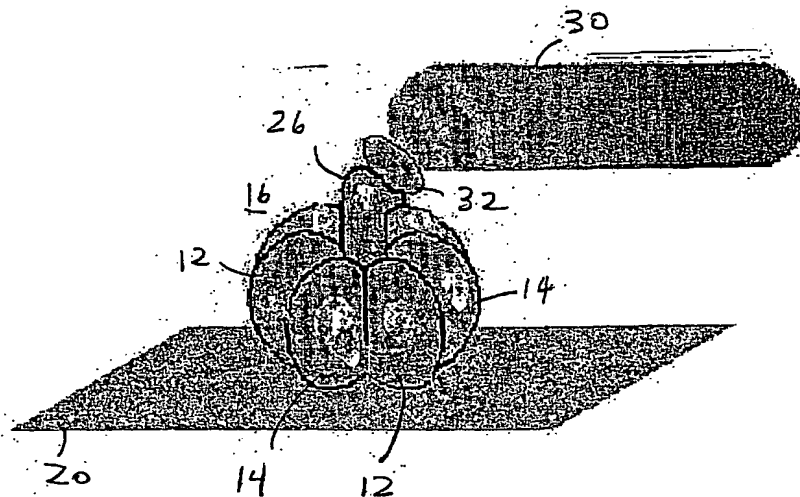
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(54) Title: POLARIZATION-ENHANCED DETECTOR WITH GOLD NANORODS FOR DETECTING NANOSCALE ROTATIONAL MOTION AND METHOD THEREFOR



(57) Abstract: A nanoscale motion detector attaches a gold nanorod (30) to the rotating arm (26) of a molecular structure (10) to cause the nanoparticle to rotate. The molecular structure is an F1-ATPase enzyme. The gold nanorod is exposed to a light source. The long axis of the gold nanorod scatters red light when the nanorod is in a first position. The short axis of the gold nanorod scatters green light when the nanorod is in a second position. A polarizing filter filters the red and green light to detect the rotational motion by observing alternating red and green lights. A detection DNA stand (50) is coupled between the gold nanorod and the molecular structure. The detection DNA strand hybridizes with a target DNA strand (58) if the target DNA strand matches the detection DNA strand to form a structural link between the molecular structure and gold nanorod.

WO 2004/053501 A2



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